

AUGUST TECHNOLOGY CORP
Form 10-K
March 01, 2004

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

FORM 10-K

**ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d)
OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2003

Commission File Number 000-30637

AUGUST TECHNOLOGY CORPORATION

(Exact name of Registrant as specified in its charter)

Minnesota
(State of incorporation)

**4900 West 78th Street
Bloomington, MN**
(Address of principal executive offices)

(952) 820-0080
(Registrant's telephone number, including area code)

41-1729485
(I.R.S. Employer
Identification No.)

55435
(Zip Code)

Securities registered pursuant to Section 12(b) of the Act: None

Securities registered pursuant to Section 12(g) of the Act:

Title of each class:

Common Stock, no par value

Indicate by check mark whether the Registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the Registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the Registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this form 10-K or any amendment to this form 10-K.

Indicate by check mark whether the registrant is an accelerated filer (as defined in Exchange Act Rule 12b-2). Yes No

The aggregate market value of voting stock held by nonaffiliates of the Registrant was \$73,008,610 as of June 30, 2003.

The number of shares of Common Stock, no par value, outstanding as of February 23, 2004 was 17,671,930.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the definitive Proxy Statement to be delivered to shareholders in connection with the 2004 Annual Meeting of Shareholders are incorporated by reference into Part III.

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PART I**Item 1. Business****Company Overview**

Since our founding in 1992, we have become recognized as a world-class provider of automated defect detection and product characterization systems for microelectronic device manufacturers. Our systems provide these manufacturers with information that enables process-enhancing decisions, ultimately lowering manufacturing costs, improving time-to-market and enhancing the performance of their products. We combine our core competencies in machine vision technology, optics, lighting and precision motion control with our proprietary software and extensive microelectronic-specific applications experience to deliver scalable, modular systems that excel at the automated detection of advanced macro

defects, which we define to be defects greater in size than 0.5 micron. We sell our systems to many of the leading microelectronic device manufacturers throughout the world within the markets of semiconductors, advanced packaging applications, optoelectronics, MEMS, data storage and other emerging markets.

We have traditionally provided systems to address the automated inspection needs of the early stages of the final manufacturing or back-end of the microelectronic device manufacturing process. These needs were met primarily with our NSX Series and 3Di Series of products. We recently introduced the AXi Series and EXi Series systems for advanced macro detection in the front-end of the wafer manufacturing process. When used in conjunction with the B20 back-side inspection option these systems allow a manufacturer to inspect the top, edge and bottom of a wafer's surface. We believe we will be the first to offer all surface wafer inspection. We complement this broad inspection capability with an expanding suite of software tools designed to enhance the speed and effectiveness of the process by which device manufacturers analyze defects and make decisions regarding their manufacturing process to reduce or eliminate such defects. We refer to this process as the "detection-to-decision" process.

In addition to internal development, we look to expand through strategic acquisitions of complementary products and technologies. In April 2003 we completed the acquisition of Semiconductor Technologies & Instruments, Inc. ("STI"), adding the WAV product line for high speed wafer probe mark inspection and metrology to our product portfolio. In July 2003 we acquired the assets of Counterpoint Solutions, Inc. ("CSI"), including the design for a recently introduced defect review system for advanced microscope-based defect imaging and analysis. The VersaScope provides us the ability to serve our customers earlier in their device development process and to more quickly analyze defects and understand their manufacturing process as they move toward high volume production.

Our Market

Rapid advances in semiconductor and other microelectronic device technology, including miniaturization, increasing complexity and advanced packaging and interconnect solutions, allow manufacturers to enhance the quality and capabilities of their devices. These advances often increase the complexity of the processes required to produce the devices as well as the associated production costs. Because of these increased costs and the need to ensure that performance and reliability are not sacrificed, the role of inspection and rapid detection of defects during multiple stages of the microelectronic production process is becoming increasingly critical. Defects can occur throughout the manufacturing process as a result of such things as equipment misalignment, contamination, residue, corrosion, or the misapplication of various films. Defects such as scratches, cracks and chip-outs also can be generated by mechanical handling in the manufacturing process.

Historically, manufacturers generally have relied on engineers and technicians using microscopes to manually inspect sample batches of wafers to detect defects during the various stages of the manufacturing process. As a result, it has been impractical and cost-prohibitive for manufacturers to capture critical

process data by inspecting every wafer and die after each process step. These manual inspection limitations result in the following:

Yield loss due to a lack of process data. The inability to capture adequate data throughout the manufacturing process prevents microelectronic device manufacturers from locating problems on a timely basis and taking corrective action. Timely corrective action could minimize the scrapping of valuable wafers and improve the process and yield for future products.

Productivity constraints. As microelectronic devices have become more complex, the need for more extensive inspections and defect data has increased significantly. Given these requirements, manufacturers must either add more technicians, significantly impacting productivity of the microelectronic fabrication facility or assume a greater risk of defects remaining undetected until later in the process.

Defective product shipments. By inspecting less than 100% of their products, manual inspection requires manufacturers to assume a greater risk of shipping defective products to their customers.

Slower time-to-market. As microelectronic device and end-product life cycles decrease, the speed at which manufacturers must reach optimal production yields has become increasingly critical. This pressure to minimize time-to-market requires manufacturers to reduce the amount of time spent training technicians, qualifying new production equipment and managing the logistics of a manual inspection process.

Increased labor and facility requirements. The large number of technicians and microscopes needed to manually inspect microelectronic devices requires valuable floor space and significant capital commitments. In addition, attracting and retaining qualified technicians has become increasingly difficult.

Automated inspection systems and data management and analysis software enable manufacturers to overcome these limitations by allowing them to inspect 100% of their products and identify and resolve defects at various stages of the manufacturing process, helping to drive down production costs, increase throughput and decrease time-to-market.

Our Solutions

We deliver automated advanced macro defect inspection and metrology systems for microelectronic industries. Our systems provide device manufacturers with valuable information about their products and processes, at a speed that makes it practical to inspect each device rather than a small sample. We accomplish this by combining our core competencies in machine vision technology, optics, lighting and precision motion control with our proprietary software and extensive microelectronic-specific applications experience to provide cost-effective solutions. We offer our systems at several price performance levels to satisfy our customers' diverse requirements. Specifically, we provide:

Fast, automated, 100% wafer inspection. Our systems are specifically designed to address our customers' need for fast, automated inspection tools. Our systems are able to inspect up to 120 wafers per hour depending upon the application and wafer size. Depending on the application, our systems can inspect a complex die approximately 100 times faster than a human operator. This speed allows our customers to inspect 100% of their production without decreasing throughput.

Data collection to enable higher productivity and yields. Our systems enable microelectronic device manufacturers to cost-effectively collect and process defect data at multiple key points in the production process and provide manufacturers with the information required to improve their production processes and yields. Integrated reporting and analysis tools allow manufacturers to extract critical information about product defects, including location, size and other important defect characteristics.

Scalable, modular inspection platforms. Our systems are designed on common platforms that allow us to configure flexible systems to meet our customers' application and throughput requirements. This

flexibility provides an easy upgrade path for customers to respond to changes in process technologies, substrate sizes or materials.

Access to expert application development resources. Our advanced application engineers and design experts work collaboratively with our customers to optimize the use of inspection in their manufacturing process. This reduces their process development time and costs. We have field application engineers in strategic locations throughout the world to work with our customers on-site and provide the knowledge and expertise to deliver a total inspection solution.

Focus on advanced macro inspection. We focus on serving various advanced macro inspection applications rather than attempting to pursue the entire range of possible inspection and metrology applications. This allows us to most effectively concentrate our resources on delivering leading solutions to these 0.5 micron and larger applications. As our business continues to grow we will expand our focus to include other areas of inspection and metrology that are complimentary to our existing advanced macro inspection business.

Our Strategy

Our strategy is built around achieving our vision to dominate the automated inspection market and generate complete product characterization solutions for evolving microelectronic markets in order to drive down costs and time-to-market for our customers. We have identified five strategic initiatives that are critical to successfully implementing our vision:

Market diversification. We leverage our core competencies across a variety of microelectronic industries using similar manufacturing processes and within multiple applications. While our customers include the suppliers of semiconductor devices used in a wide range of electronic products such as cellular phones, personal digital assistants, cable modems, network switches and personal computers, they also include suppliers of microelectronic devices within markets such as advanced packaging applications, MEMS, optoelectronics, data storage and other emerging markets. By maintaining our diversification initiatives, we strive to maximize our market opportunity while lessening the impact from the economic cycles of any one industry.

The following table represents our net revenues for the years ended December 31, 2003 and 2002 from each of the microelectronic markets we serve.

Microelectronic Market	2003	Percent of total net revenues	2002	Percent of total net revenues	Year-over- year change
	Net Revenues (in thousands)		Net Revenues (in thousands)		
Semiconductor	\$ 17,595	44 %	\$ 6,011	24 %	193 %
Advanced packaging applications	15,772	39 %	12,410	50 %	27 %
MEMS	2,775	7 %	1,781	7 %	56 %
Optoelectronics	2,581	6 %	3,291	13 %	-22 %
Data storage & other	1,600	4 %	1,565	6 %	2 %
Total	\$ 40,323		\$ 25,058		61 %

Technology leadership. Through our technology leadership we deliver customer-driven product innovations focused on price, performance and flexibility. Technology leadership is critical to increasing our competitive win rate, maintaining strong gross margins and building market dominance. Our recent product development efforts resulted in several new enhancements to our existing NSX Series, 3Di Series and Yield *Pilot* product lines. New introductions in 2003 include the AXi Series for advanced macro defect inspection and EXi Series for edge inspection and metrology. These products allow us to more aggressively enter the front-end of the microelectronic device manufacturing process by addressing

advanced macro inspection needs. Another new introduction in 2003 was VersaScope, a semi-automated defect review system for advanced microscope-based imaging and analysis designed to allow customers to analyze and eliminate their defects once they've been detected.

In 2003, 47% of our revenues were derived from products and solutions introduced during the prior two years. We plan to continue making significant investments in research and development to maintain and extend our technology leadership.

Customer application partnerships. Our customer application partnership program is designed to meet specific customer requirements with solutions that are engineered to their unique specifications. Through this process, we are able to forge stronger and more strategic relationships with existing and new customers. In 2003, we completed a joint development program with one of the top ten semiconductor manufacturers in the world to facilitate our entry into front end wafer processing applications with the commercialization of our AXi Series.

Global presence. We continually maintain and enhance our global presence in order to provide the infrastructure necessary to support our global customer base. In 2003, we enhanced our presence in Asia by adding staff in our Taiwan office to better support our customers in Southeast Asia. We believe our direct presence in Southeast Asia and our relationships with large Taiwanese foundries will be a catalyst for expansion in mainland China. In March 2004 we are opening a direct sales and service office in South Korea. We also have direct sales and service personnel and independent distributors located strategically in Singapore, Europe and Japan. Our support services include web-based service capability and 24-hour global support.

External growth. We increase and enhance our growth opportunities through external sources, including acquisitions, collaborations, licensing and joint ventures. We completed the acquisitions of STI and CSI in 2003 and will continue to examine potential acquisitions that will provide us with additional products, technological expertise, or sales and service capabilities. The acquisition of STI expands our presence within final manufacturing and brings access to key customers and technology. We acquired CSI to improve our data analysis and defect classification capabilities. We are also active in industry collaborations, such as the Advanced Packaging and Interconnect Alliance (APiA) and the Die Products Consortium (DPC). The APiA is focused on enhancing productivity and process solutions for advanced packaging. The DPC is a collaboration of leading chip manufacturers and equipment suppliers promoting improved die product quality and manufacturing processes. We believe that organizations such as these will enable us to build stronger relationships with industry leaders and increase our market opportunity by driving the need for advanced automated inspection products.

Our Products

We strive to be early to market with innovative defect inspection and review solutions to emerging microelectronic device manufacturing needs. In 1997, we introduced the NSX Series, our first automated defect inspection system for final manufacturing, and since then have maintained leadership of that market segment. In 2003, we introduced inspection technology to address the front-end of the microelectronic device manufacturing process with the introduction of the AXi Series and EXi Series of products and the B20 back-side inspection option permitting inspection of the entire surface of a wafer. Most recently, we introduced the VersaScope, a semi-automated, microscope-based, defect review system. The following table summarizes the primary attributes of our products:

Product	Introduced	Functionality	Applications			Price Range
			Front-End	Outgoing Quality Control	Final Manufacturing	
VersaScope ⁽¹⁾	2003	<ul style="list-style-type: none"> Advanced imaging microscope-based system Harmony review and classification system 	Fab	X		\$350,000-\$750,000
B20 Option						